IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Kyusung Kim	Group Art Unit: 3664
Serial No.:	10/802,151	Examiner: Jen, Mingjen
Filed:	03/16/2004	Confirmation No.: 3944

For: METHOD FOR FAULT DIAGNOSIS OF A TURBINE ENGINE
Docket No.: H0006347
Customer No.: 000128

ARGUMENTS ACCOMPANYING PRE-APPEAL BRIEF REQUEST FOR REVIEW

I. Status of Claims

Claims 1-40 are pending in this application, with Claims 1, 22, and 31 being the independent claims. Claims 1-3, 21, 22, 24, and 25 stand rejected under 35 U.S.C. § 102(b) as 102 as allegedly being anticipated by U.S. Patent No. 5,018,096 (Pettigrew). Claims 4-8, 15, 16, 23, and 26-29 stand rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Pettigrew in view of U.S. Patent No. 5,311,421 (Nomura et al.). Claims 9-14, 17-20, 23, 26-29, and 31-34 stand rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Pettigrew in view of U.S. Patent No. 6,408,259 (Goebel et al.). Claims 30 and 35-40 stand rejected under 35 U.S.C. § 103 as allegedly being upatentable over Pettigrew in view of Nomura et al. and further in view of Goebel et al.

II. Rejections under 35 U.S.C. § 102

Independent Claims 1, 22, and 31 each recite, *inter alia*, the following steps (or a computer readable medium having computer-executable instructions for performing the following steps): calculating a residual value from an engine operating parameter or engine operating data, normalizing the residual to yield a normalized residual, mapping the normalized residual value into an engine condition space having a plurality of clusters, each of said plurality of clusters representing either a normal vector engine condition or a faulty vector engine condition, identifying a closest cluster within said engine condition space, said closest cluster being closer to said at least one input vector than any other of said plurality of clusters, determining a normal engine condition for the engine undergoing analysis if said closest cluster represents a normal vector engine condition, and determining a faulty engine condition for the engine undergoing analysis if said closest cluster represents a faulty vector engine condition.

At least this combination of features is not taught, disclosed, or suggested in Pettigrew. For example, Pettigrew does not disclose at least the steps of calculating a residual value from an engine operating parameter or engine operating data and normalizing the residual value to yield a normalized residual, as is recited in Applicant's Claims. Rather, Pettigrew only discloses normalizing raw data, and then obtaining residual values from the normalized data. (Pettigrew, at Col. 10, lines 43-53). Pettigrew does not disclose or suggest the step of normalizing the residual values. In short, while Applicant's Claims recite the steps of calculating a residual value and then normalizing this residual value, Pettigrew discloses the reverse procedure of normalizing data and then creating a residual based on the normalized data.

The Final Office Action asserted that Pettigrew discloses the calculation of a residual value (namely, a "REDD" value) as well as "normalizing engine residual value" (Final Office Action, at p. 29) (citing Pettigrew, at FIG. 4, Steps 206, 208, and 210). However, the Specification of Pettigrew corresponding with Steps 206, 208, and 210 flatly contradicts this assertion of the Final Office Action. Specifically, the Specification of Pettigrew clearly states that "data is first normalized", and then, subsequently, the residual or "REDD" values are

obtained therefrom. (Pettigrew, at Col. 10, lines 43-53). Accordingly, Pettigrew does not disclose a step of normalizing the residual (REDD) values. Rather, in Pettigrew, only the raw data is normalized, and this occurs before the residual (REDD) values are even created. Thus, for example, the steps in Pettigrew would result in data that is normalized only with respect to operating conditions, but that would not be normalized with respect to engine-to-engine variation (i.e. because Pettigrew does not disclose the separate step of normalizing the residual values).

From the above, it should be abundantly clear that there is no disclosure whatsoever in Pettigrew of the steps of calculating a residual value from an engine operating parameter or engine operating data and normalizing the residual value to yield a normalized residual.

III. Rejections under 35 U.S.C. § 103

None of the remaining citations, in particular Nomura et al. and Goebel et al., make up for the glaring deficiencies of Pettigrew. Accordingly, the § 103 rejections of the Claims that depend from independent Claims 1, 22, and 31 also cannot stand.

IV. Conclusion

In view of the foregoing, it is submitted that the Office Action's reliance upon Pettigrew, Nomura et al., and Goebel et al., does not support rejection of the Claims, and that the above-noted rejections should be withdrawn. Hence, Applicants request that the reviewing panel find that the present application is in condition for allowance.

Respectfully submitted,

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